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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/GB95/01689 (22) International Filing Date: 18 July 1995 (18.07.95) (30) Priority Data: 9414573.7 19 July 1994 (19.07.94) GB (71) Applicant (for AU BB CA GB IE KE LK MN MW NZ SD SG SZ TT UG only): UNILEVER PLC (GB/GB); Unilever House, Blackfriars, London EC4P 4BQ (GB). (71) Applicant (for all designated States except AU BB CA GB IE KE LK MN MW NZ SD SG SZ TT UG): UNILEVER NV (NL/NL); Weena 455, NL-3013 AL Rotterdam (NL). (72) Inventors: JOBLING, Margaret; 145 Heath Road, Bebington, Wirral, Merseyside L63 2HA (GB). GRIEVESON, Alisa, Pauline, Hilary; 11 Oldfield Gardens, Heswall, Wirral, Merseyside L63 6TG (GB). SHANA'A, May; 200 Old Paliside Road, Fort Lee, NJ 07024 (US). CHAMBERS, John, George; 11 Central Avenue, Bromborough, Wirral, Merseyside L62 2BS (GB). SIME, Stuart, James; 5 Sutton Hall Gardens, Little Sutton, South Wirral, Cheshire L66 4QH (GB).		(74) Agents: LINN, S., Jonathan et al.; Mewburn Ellis, York House, 23 Kingsway, London WC2B 6HP (GB). (81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG). Published With international search report.
(54) Title: DETERGENT COMPOSITION (57) Abstract <p>An aqueous liquid cleansing and moisturising composition comprising a surface active agent and a benefit agent in which the surface active agent and benefit agent are separate but combinedly dispensable from a single packaging means in a predetermined ratio as discrete domains. Separating the benefit agent from the surface active agent results in improved deposition of the benefit agent.</p>		

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DETERGENT COMPOSITION

The present invention relates to detergent compositions suitable for topical application for cleansing and improving the condition of the human body, particularly for moisturising the skin, hair, nails and other epithelial tissues, including the mucosae. In particular, it relates to compositions which are formulated to give mild cleansing and conditioning of the skin.

Compositions formulated to cleanse the skin are well known. It is also known to formulate products which provide both a cleansing and a moisturising benefit.

For example WO 90/13283 discloses a composition comprising an acyl ester of an isethionic acid salt, a long chain fatty acid, a moisturiser component and, optionally, soap.

One of the problems which may be encountered with such dual purpose compositions is that they contain an insufficient level of moisturiser component or an insufficient amount is deposited on use.

We have found a way of formulating such compositions such that they can deliver effective moisturising, conditioning and/or protection of the skin.

Another problem associated with such dual cleansing and moisturising compositions is instability. According to WO 94/03152, concerned with shower gels comprising a non-soap detergent, silicone oil and cationic polymers, the maximum average droplet size of the silicone oil that can be used is 2 microns, if product stability is to be maintained.

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We have now found the stability of a dual cleansing and moisturising product and delivery and deposition of the moisturising agent can be improved by providing a composition in which the cleansing and moisturising components are
5 separate but combinedly dispensable from a packaging means as discrete domains.

Thus, according to the invention there is provided an aqueous liquid cleansing and moisturising composition comprising:-
10

- a) a surface active agent selected from anionic, nonionic, zwitterionic and cationic, surface active agents, soap and mixtures thereof; and
- 15 b) a benefit agent;

wherein the benefit agent and surface active agent are separate but combinedly dispensable from a single packaging means in a predetermined ratio as discrete domains, the
20 domains having one dimension of at least about 1000 microns.

An advantage of the present invention is that it leads to improved deposition of benefit agents from a surface active agent containing aqueous liquid composition during use. The
25 surface active agent and benefit agent are separated in the composition, i.e. they do not directly contact one another in the composition. This avoids adverse interactions which may occur between these two components and resulting in ineffective deposition of the benefit agent.

30 The surface active agent and benefit agent are dispensable from a single packaging means in a predetermined ratio according to the use for which composition is intended. An advantage of dispensing the surface active agent and benefit
35 agent in combination is that it avoids the inconvenience of

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having to post mix the two components. This is particularly advantageous when the separate components of a composition need to be mixed in precise ratios in order to achieve the desired effect.

5

The discrete domains of the composition of the invention may be considered as separate stripes of surface active agents and of benefit agent.

10 The composition is suitable for cleansing and "moisturising", "conditioning" or "protection" of the skin. The benefit agent is included in the composition to moisturise, condition and/or protect the skin. By "benefit agent" is meant a substance that softens the skin (stratum corneum) and keeps
15 it soft by retarding the decrease of its water content and/or protects the skin.

Preferred benefit agents include

- 20 a) silicone oils, gums and modifications thereof such as linear and cyclic polydimethylsiloxanes, amino, alkyl alkylaryl and aryl silicone oils;
- b) fats and oils including natural fats and oils such as jojoba, soyabean, rice bran, avocado, almond,
25 olive, sesame, persic, castor, coconut, mink oils; cacao fat, beef tallow, lard; hardened oils obtained by hydrogenating the aforementioned oils; and synthetic mono, di and triglycerides such as myristic acid glyceride and 2-ethylhexanoic acid
30 glyceride;
- c) waxes such as carnauba, spermaceti, beeswax, lanolin and derivatives thereof;
- d) hydrophobic plant extracts;
- e) hydrocarbons such as liquid paraffins, petroleum
35 jelly, microcrystalline wax, ceresin, squalene,

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- squalane, and mineral oil;
- 5 f) higher fatty acids such as lauric, myristic, palmitic, stearic, behenic, oleic, linoleic linolenic, lanolic, isostearic and poly unsaturated fatty acids (PUFA) acids;
- g) higher alcohols such as lauryl, cetyl, steryl, oleyl, behenyl, cholesterol and 2-hexadecanol alcohol;
- 10 h) esters such as cetyl octanoate, myristyl lactate, cetyl lactate, isopropyl myristate, myristyl myristate, isopropyl palmitate, isopropyl adipate, butyl stearate, decyl oleate, cholesterol isostearate, glycerol monostearate, glycerol distearate, glycerol tristearate, alkyl lactate for
- 15 example lauryl lactate, alkyl citrate and alkyl tartrate;
- i) essential oils such as fish oils, mentha, jasmine, camphor, white cedar, bitter orange peel, ryu, turpentine, cinnamon, bergamont, citrus unshiu,
- 20 calamus, pine, lavender, bay, clove, hiba, eucalyptus, lemon, starflower, thyme, peppermint, rose, sage, menthol, cineole, eugenol, citral, citronelle, borneol, linalool, geraniol, evening primrose, camphor, thymol, spirantol, pinene,
- 25 limonene and terpenoid oils;
- j) lipids such as cholesterol, ceramides, sucrose esters and pseudo-ceramides as described in European Patent Specification No. 556 957;
- k) vitamins such as vitamin A and E, and vitamin alkyl
- 30 esters, including those vitamin C alkyl esters;
- l) sunscreens such as octyl methoxyl cinnamate (Parsol MCX) and butyl methoxy benzoylmethane (Parsol 1789)
- m) Phospholipids; and
- n) mixtures of any of the foregoing components.
- 35

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Where adverse interactions between the benefit agent and surface active are likely to be particularly acute, the benefit agent may be incorporated in the compositions of the invention in a carrier.

5

Such benefit agents include lipids; alkyl lactates; sunscreens; esters such as isopropyl palmitate and isopropyl myristate; and vitamins. The carrier can, for example, be a silicone or hydrocarbon oil which is not
10 solubilised/micellised by the surface active phase and in which the benefit agent is relatively soluble.

Particularly preferred benefit agents include silicone oils, gums and modification thereof; esters such as isopropyl
15 palmitate and myristate and alkyl lactates.

The benefit agent can be provided in the form of an emulsion.

The benefit agent is preferably present in amount of from 0.1
20 to 50 wt%, most preferably from 4 to 25 wt%.

An advantage of the composition according to the invention is that, during use, it deposits benefit agent onto the skin at a level which results in a perceivable benefit. Without
25 being bound by theory, it is believed the benefit agent is dispersed into large pools during dilution of the composition in use and these pools deposit readily onto the skin.

The surface active agent can be selected from any known
30 surfactant suitable for topical application to the human body. Mild surfactants, i.e. surfactants which do not damage the stratum corneum, the outer layer of skin, are particularly preferred.

35

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One preferred anionic detergent is fatty acyl isethionate of formula:



5 where R is an alkyl or alkenyl group of 7 to 21 carbon atoms and M is a solubilising cation such as sodium, potassium, ammonium or substituted ammonium. Preferably at least three quarters of the RCO groups have 12 to 18 carbon atoms and may be derived from coconut, palm or a coconut/palm blend.

10

Another preferred anionic detergent is alkyl ether sulphate of formula:



15 where R is an alkyl group of 8 to 22 carbon atoms, n ranges from 0.5 to 10 especially from 1.5 to 8, and M is a solubilising cation as before.

20 Other possible anionic detergents include alkyl glyceryl ether sulphate, sulphosuccinates, taurates, sarcosinates, sulphoacetates, alkyl phosphate, alkyl phosphate esters and acyl lactylate, alkyl glutamates and mixtures thereof.

25 Sulphosuccinates may be monoalkyl sulphosuccinates having the formula: $\text{R}^3\text{O}_2\text{CCH}_2\text{CH}(\text{SO}_3\text{M})\text{CO}_2\text{M}$; and amido-MEA sulphosuccinates of the formula: $\text{R}^3\text{CONHCH}_2\text{CH}_2\text{O}_2\text{CCH}_2\text{CH}(\text{SO}_3\text{M})\text{CO}_2\text{M}$; wherein R^3 ranges from C_8 - C_{20} alkyl, preferably C_{12} - C_{18} alkyl and M is a solubilising cation.

30 Sarcosinates are generally indicated by the formula: $\text{R}^3\text{CON}(\text{CH}_3)\text{CH}_2\text{CO}_2\text{M}$, wherein R^3 ranges from C_8 - C_{20} alkyl, preferably C_{12} - C_{18} alkyl and M is a solubilising cation.

35 Taurates are generally identified by the formula: $\text{R}^3\text{CONR}^4\text{CH}_2\text{CH}_2\text{SO}_3\text{M}$, wherein R^3 ranges from C_8 - C_{20} alkyl,

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preferably C_{12} - C_{18} alkyl, R^3 ranges from C_1 - C_4 alkyl, and M is a solubilising cation.

Harsh surfactants such as primary alkane sulphonate or alkyl benzene sulphonate will generally be avoided.

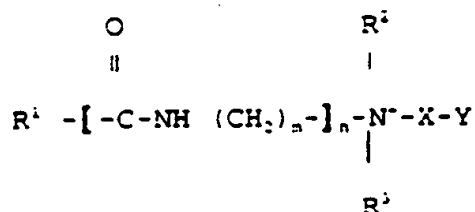
Suitable nonionic surface active agents include alkyl polysaccharides, lactobionamides, ethyleneglycol esters, glycerol monoethers, polyhydroxyamides (glucamide), primary and secondary alcohol ethoxylates, especially the C_{8-20} aliphatic alcohols ethoxylated with an average of from 1 to 20 moles of ethylene oxide per mole of alcohol.

If the surface active agent comprises soap, the soap is preferably derived from materials with a C_8 to C_{22} substantially saturated carbon chain and, preferably, is a potassium soap with a C_{12} to C_{18} carbon chain.

Mixtures of any of the foregoing surface active agents may also be used.

The surface active agent is preferably present at a level of from 1 to 35 wt%, preferably 3 to 30 wt%.

It is also preferable that the composition includes from 0.5 to 15 wt% of a cosurfactant agent with skin-mildness benefits. Suitable materials are zwitterionic detergents which have an alkyl or alkenyl group of 7 to 18 carbon atoms and comply with an overall structural formula:-



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where R^1 is alkyl or alkenyl of 7 to 18 carbon atoms
 R^2 and R^3 are each independently alkyl, hydroxyalkyl or
 carboxyalkyl of 1 to 3 carbon atoms;

m is 2 to 4;

5 n is 0 or 1;

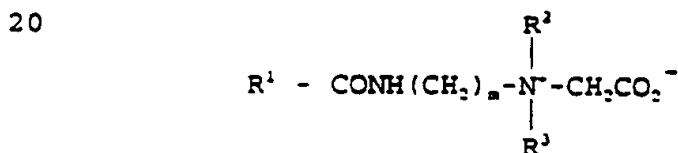
X is alkylene of 1 to 3 carbon atoms optionally
 substituted with hydroxyl; and

Y is $-\text{CO}_2^-$ or $-\text{SO}_3^-$.

10 Zwitterionic detergents within the above general formula
 include simple betaines of formula:-



and amido betaines of formula:



25 where m is 2 or 3.

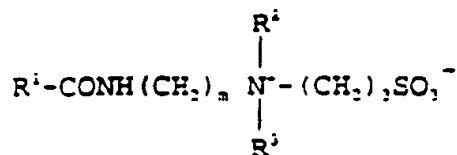
In both formulae R^1 , R^2 and R^3 are as defined previously.
 R^1 may, in particular, be a mixture of C_{12} and C_{14} alkyl groups
 derived from coconut so that at least half, preferably at
 30 least three quarters, of the group R^1 has 10 to 14 carbon
 atoms. R^2 and R^3 are preferably methyl.

A further possibility is a sulphobetaine of formula:-



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or



where m is 2 or 3, or variants of these in which
 $\text{-(CH}_2)_n\text{SO}_3^-$ is replaced by



R^i , R^j and R^k in these formulae are as defined previously.

A structurant may be added to the phase comprising the surface active agent. Suitable materials include swelling clays, for example laponite; fatty acids and derivatives thereof, in particular, fatty acid monoglyceride polyglycol ethers; cross-linked polyacrylates such as Carbopol (TM) (polymers available from Goodrich); acrylates and copolymers thereof; polyvinylpyrrolidone and copolymers thereof; polyethylene imines; salts such as sodium chloride and ammonium sulphate; sucrose esters; gellants; and mixtures thereof.

Of the clays, particularly preferred are synthetic hectorite (laponite) clay used in conjunction with an electrolyte salt capable of causing the clay to thicken. Suitable electrolytes include alkali and alkaline earth salts such as halides, ammonium salts and sulphates.

The surface active agent phase may also comprise a thickening agent, ie a material which maintains the viscosity of this phase as the shear rate thereof is increased during use. Suitable materials include cross-linked polyacrylates such as Carbopol (TM) (polymers available from Goodrich); natural gums including alginates, guar, xanthan and polysaccharide derivatives including carboxy methyl cellulose and

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hydroxypropyl guar; propylene glycols and propylene glycol oleates; salts such as sodium chloride and ammonium sulphate; glycerol tallowates; and mixtures thereof.

5 Thickeners may also be added to the benefit agent in order to achieve the required viscosity during use. Preferred thickeners for the benefit agent include fumed silica; polyethylene; alkyl silicone waxes; aluminium silicate; lanesterol; natural and synthetic waxes; fatty acids and
10 derivatives thereof, in particular, fatty acid monoglyceride polyglycol ethers; higher fatty alcohols; petrolatum; narogel; polyammonium stearate; hydrotalcites; and mixtures thereof. Hydrotalcites are materials of general formula



where M is a divalent metal ion e.g. Mg^{2+} ;
N is a trivalent metal ion e.g. Al^{3+} ;
X is an exchangeable anion e.g. CO_3^{2-} , NO_3^- ;
20 stearate, cinnamate.;
m is the number of divalent metal ions; and
n is the number of trivalent metal ions.

Whilst some materials can function as both a benefit agent
25 and a thickener therefor, it will be appreciated that the benefit and thickening function cannot be provided by the same component. However, it will be understood that where the composition comprises two or more benefit agents one of said benefit agents may also function as a thickening agent.

30 Further examples of structurants and thickeners are given in the International Cosmetic Ingredient Dictionary, Fifth Edition, 1993, published by CTFA (The Cosmetic, Toiletry & Fragrance Association), incorporated herein by reference.

35

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It is an essential feature of the invention that the benefit agent and surface active agent are separate but combinedly dispensable from a packaging means and typically a single packaging means. Such a packaging means includes those systems which comprise two separate compartments. Ensuring that the surface active agent and benefit agent are separate can be achieved in a variety of ways. Packaging of the composition such that the surface active agent and benefit agent are presented in separate compartments or in separate domains within the packaging; including encapsulation of the benefit agent; and by processing of the composition by coextrusion to produce a striped product in which individual stripes contain either the surface active agent or benefit agent.

A further advantage of the composition according to the invention is that it provides a means whereby benefit agents which are sensitive to surface active agents, i.e. there is a detrimental interaction between the surface active agent and benefit agent, can be used because they are protected from the surface active agent.

Furthermore, the benefit agent may also function as a carrier to deliver efficacy agents to skin treated with the compositions of the invention. This route is particularly useful for delivering efficacy agents which are difficult to deposit onto the skin or those which suffer detrimental interactions with other components in the composition. In such cases the carrier is often a silicone or hydrocarbon oil which is not solubilised/micellised by the surface active phase and in which the efficacy agent is relatively soluble. Examples of such efficacy agents include anti-viral agents; hydroxycaprylic acids; pyrrolidone; carboxylic acids; 3,4,4'-trichlorocarbanilide; benzoyl peroxide; perfumes; essential oils; germicides and insect repellants such as

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2,4,4'-trichloro-2'-hydroxydiphenyl ether (Irgasan DP300); salicylic acid; willow extract, N,N-dimethyl m-toluamide (DEET); and mixtures thereof.

5 Compositions of the invention may be formulated as products for washing the skin, for example, bath or shower gels, hand washing compositions or facial washing liquids; pre- and post-shaving products; rinse-off, wipe-off and leave-on skin care products; products for washing the hair and for dental
10 use.

The compositions of the invention will generally be pourable liquids or semi-liquids e.g. pastes and will have a viscosity in the range 250 to 100,000 mPas measured at a shear rate
15 10s^{-1} and 25°C in a Haake Rotoviscometer RV20.

When the product is formulated as a shower gel the viscosity will generally be in the range 800 to 15000 mPas measured at a shear rate 10s^{-1} and 25°C .

20 When the product is formulated as a facial wash product the viscosity will generally be in the range 3000 to 100,000 mPas measured at a shear rate 10s^{-1} and 25°C .

25 Other typical components of such compositions include opacifiers, preferably 0.2 to 2.0 wt%; preservatives, preferably 0.2 to 2.0 wt% and perfumes, preferably 0.5 to 2.0 wt%.

30 The invention will be further illustrated by reference to the following non-limiting examples.

Examples

35 In the examples:-

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Behenyl alcohol was Nacol 22-97 ex Condea.

Behenyl silicone wax was Cire 71649 ex Rhone Poulenc.

Coco amidopropyl betaine was Rewoteric AMB14kS ex Rewo
(examples I to V) or Amonyl BA 380 ex Seppic.

5 Cross-linked polyacrylate was Carbopol ETD 2020 ex Goodrich.

Fatty acid monoglyceride polyglycol ether was Rewoderm LIS 80
ex Rewo.

Guar hydroxypropyl trimonium chloride was Jaguar C-13-S ex
Meyhall.

10 IPP (isopropyl palmitate) was Estol 1517 ex Unichema.

Lauryl lactate was Crodamol LL ex Croda Chemicals.

MEA sulphosuccinate was Witco 5690 Ex Witco.

Polyethylene AC617 was from A-C Performance Additives.

15 Silica was a hydrophobically modified silica, Aerosil R972,
ex Degussa.

Silicone oil was DC200, a polydimethylsiloxane ex Dow Corning
with a viscosity of 60000 mPas.

Silicone oil emulsion was BC 92/057 ex Basildon.

20 Sodium cocoyl isethionate was either Jordapon CI ex PPG/Mazer
(examples I to V) or Hostapan SCI ex Hoechst.

Sodium lauryl ether sulphate was Genapol ZRO ex Hoechst

Stearic acid was Pristerine 4911 ex Unichema.

Examples I-IV

25 The following method was used to determine the amount of
benefit agent deposited onto full thickness porcine skin (5 x
15 cm) treated with compositions according to the invention.

30 The skin was prehydrated and then 0.5 ml of the product
applied to it. The product was lathered for 10 seconds and
then rinsed for 10 seconds under running water.

Thereafter the skin was wiped once with a paper towel to
remove excess water.

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2 minutes after drying a strip of adhesive tape was pressed onto the skin for 30 seconds by applying a constant load of 10g.cm^{-2} . The adhesive tape employed was J-Lar Superclear (TM) tape having a width of 2.5cm. In total ten strips of tape were applied to adjacent sites on the skin.

In this test procedure silicone which has deposited on the skin will subsequently be transferred to the tape along with some of the outer layer of the skin.

The amounts of silicon and skin adhering to the tape are determined by means of X-ray fluorescence spectroscopy. The tape strips are placed in an X-ray fluorescence spectrometer with the adhesive side facing the beam of this machine. A mask is applied over the tape to define a standardised area in the middle of the tape which is exposed to the X-ray beam. The sample chamber of the machine is placed under vacuum before making measurements and the spectrometer is then used to measure the quantities of silicon and sulphur. The sulphur is representative of the amount of skin which has transferred to the tape.

The amounts of silicon and sulphur observed with a clean piece of adhesive tape are subtracted from the experimental measurements. The experimental measurements for the average levels of sulphur and silicon are expressed as a ratio of silicon to sulphur. From this ratio it is possible to determine silicone oil deposition per unit area of skin.

Example 1

A base facial wash product having the following composition was prepared.

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Base Formulation (A)

	wt%
Sodium cocoyl isethionate	7.5
Coco amidopropyl betaine (CAPB)	3.75
5 MEA sulphosuccinate	3.75
Fatty acid monoglyceride	3.00
polyglycol ether	
Stearic acid	3.00
Behenyl alcohol	3.00
10 Water + minors	to 100

The composition was prepared in a Esco labor (TM) mixer by mixing CAPB, MEA sulphosuccinate, fatty acid monoglyceride polyglycolether and water under vacuum and with heating to temperature in the range 70 to 80°C. Thereafter, sodium cocoyl isethionate was added and the mixture homogenised while maintaining the vacuum and temperature. Stearic acid and behenyl alcohol were then added and the temperature maintained at between 70 and 80°C until they had both melted. The resulting mixture was then cooled slowly.

The benefit agent used in this example was a silicone oil. The package used in this example was a toothpaste tube of the type described in British Patent 956 377, incorporated herein by reference, used to dispense striped toothpaste products. Such a dispenser comprises a dispensing container and a dispensing orifice. The dispensing container is provided with a central tube which extends from the orifice into the interior of the dispensing container. Base formulation is discharged through this central tube. Axial recesses are provided on the wall of the central tube defining minor passages through which the silicone oil is discharged simultaneously. Silicone oil was put into the package followed by the base formulation such that the total composition in the tube comprised 6 wt% oil and 94 wt% base

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formulation.

One gram of product was dispensed onto the skin from the tube resulting in stripes of benefit agent and base formulation with the benefit agent forming the outer stripes.

The amount of silicone oil deposited onto the skin was measured as described above. A comparison was carried out with the base formulation (A) i.e. no silicone oil added and with a product of composition (B), below, in which a silicone oil emulsion was mixed with the base formulation before being placed in the toothpaste tube.

	<u>Formulation B</u>	<u>wt%</u>
15	Sodium lauryl ether sulphate	13.00
	Coco amidopropyl betaine (CAPB)	2.00
	Silicone oil emulsion	5.00
	Guar hydroxypropyl trimonium	0.10
20	chloride	
	Sorbic acid	0.37
	Sodium citrate dihydrate	0.49
	Sodium chloride*	~2
	Citric acid*	~0.01
25	Water + minors	to 100

* level can be varied in order to give the required viscosity

* level can be varied in order to give the required pH

The following results were obtained.

	Composition	Deposition (Si/S)
35	=	90

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A	0.03
B	1.1

5 The results demonstrate the advantage of the invention in which product is dispensed with stripes of base formulation, comprising the surface active agent, and of silicone oil.

Example II

10 Example I was repeated, i.e. 1g of product with the same benefit agent was dispensed from a toothpaste tube used to dispense striped toothpastes, except the amount of thickening agent (fatty acid monoglyceride polyglycol ether) added to the base formulation was varied. In IIA, IIB and IIC the
15 base formulation was the same as that used in example I with the amount of thickening agent being 5, 7.5 and 10 wt% respectively, based on base formulation. Comparisons were carried out with the products containing the base formulation B above with 10 wt% thickening agent but no silicone oil
20 emulsion or guar derivative (composition C) and with the base formulation A.

The following results were obtained:-

25	Composition	Si:S ratio	Viscosity/mPas 25°C, 10s ⁻¹
	A	0.09	
	C	13.38	
	IIA	37.98	13300
30	IIB	48.89	72890
	IIC	89.73	84420

35 As the concentration of thickening agent in the base formulation is increased so deposition of the benefit agent is increased.

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Example III

In this example the composition of example I with 10 wt% thickener (fatty acid monoglyceride polyglycol ether) added to the base formulation, was dispensed from a pump action toothpaste dispenser, i.e. a dispenser comprising two tubes physically separated from one another with a common orifice but with separate connections to each tube, of the type described in US 5020694 and US 5038963, incorporated herein by reference. In the dispenser one tube was filled with silicone oil and the other with the base formulation A of example 1. One gram of silicone oil and base formulation were dispensed at a ratio of 50:50 oil:base. The following results were obtained.

<u>Package</u>	<u>Si:S</u>
<u>orifice radius/cm</u>	
0.3	1658
0.5	3664

Example IV

Example III was repeated with the package with the 0.3 cm radius orifice (IV) and compared with deposition from the same package in which a mixture of base formulation and silicone oil were added to both tubes of the dispenser (example D). The ratio of oil to base formulation dispensed from both packages was 50:50. The following results were obtained.

<u>Package</u>	<u>Si:S</u>
D	141
IV	4702

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The results demonstrate the advantage, in terms of deposition of silicon, of a striped product over a product in which all the components of the composition are mixed.

5 Example V

In this example the benefit agent was IPP (isopropyl palmitate). The following method was used to determine the amount of IPP deposited onto full thickness porcine skin (5 x 10 15cm pieces) treated with compositions according to the invention.

The skin was treated and washed with the compositions according to the invention by the same method as described 15 for examples I to IV. Thereafter the skin was extracted with ethanol three times (3 ml per extract), the extract made up to 10g and submitted for Gas Chromatography analysis to determine the amount of IPP deposited.

20 Example III was repeated using the package with the 0.5 cm radius orifice with the same base formulation as in example I but with IPP (isopropyl palmitate) as the benefit agent. IPP was thickened with 10wt% fumed silica.

25 Deposition of this composition was compared with deposition from the same package in which a mixture of base formulation and IPP were added to both tubes of the dispenser (example E). The ratio of IPP to base formulation dispensed from both packages was 50:50. The following results were obtained.

30

Package	Deposition of IPP/ppm
E	137
V	4702

35

- 20 -

The results demonstrate the advantage, in terms of deposition of IPP, of a striped product over a product in which all the components of the composition are mixed.

5 Example VI

The following method was used to determine the amount of lauryl lactate deposited onto skin treated with compositions according to the invention containing lauryl lactate.

10 Porcine full thickness skin was prehydrated and then 0.20g of the product and 0.8g of water applied to it. The skin was washed for 30 seconds and then rinsed for 10 seconds under running water.

15 Thereafter the skin was wiped once with a paper towel to remove excess water.

30 seconds after drying 5 strips of Desquame tape were applied to the skin sequentially for 10 seconds.

20 The strips were then removed from the skin and hydrolysed in 2ml of NaOH (0.5M) at 60°C for 60 minutes. They were then neutralised with 2ml HCl (0.5M) and in Sorensens phosphate buffer (pH 7.0). The total lauryl lactate and the protein
25 content of the tapes, representative of the lauryl lactate transferred to the skin, was determined using Sigma diagnostic assay Kits 735/10 and 690. A solution containing the assay and treated strips was prepared and the absorbance at 540nm measured in a uv spectrometer.

30

The base formulation for the following experiments was:-

	Wt%
MEA sulphosuccinate	11.7
35 Cross-linked polyacrylate	0.3

- 21 -

Sodium cocoyl isethionate	8.5
Cocoyl amidopropyl betaine	15.8
Water & minors	to 100

5 It was prepared by dispersing the polyacrylate in excess water. A premix of the two surfactants was then added to the polymer dispersion. Thereafter minors were added.

The following emollient oil mixtures were used:-

10

Oil mixture	wt%	Droplet size/ μ m
X Lauryl lactate	85	172.2
Polyethylene AC617	15	
15 Y Lauryl lactate	99	183.7
Silica	1	
Z Lauryl lactate	99	187.6
20 Behenyl silicone wax	1	

In one set of experiments to simulate the claimed invention the thickened benefit agent was applied as a stripe to the skin adjacent to a stripe of the base formulation. For comparison purposes, a emulsion of the base formulation and thickened benefit agent, was also applied to the skin.

25

(For Y the emulsion was prepared by mixing the two components at room temperature whereas for X and Z it was necessary to heat the mixture).

30

The following results were obtained:-

35

Stripe	Emulsion
lactate/Absorbance	lactate/Absorbance
Units (10^{-3})	Units (10^{-3})

- 22 -

	Untreated skin	81	81
	base	62	63
	formulation		
	base + 1%*X	95	69
5	base + 5%*X	324	128
	base + 10%*X	607	154

* based on the total composition

10		Stripe	Emulsion
		lactate/Absorbance	lactate/Absorbance
		Units (10^{-3})	Units (10^{-3})
	Untreated skin	154	151
15	base		
	formulation	139	142
	base + 5%	169	139
	lauryl lactate		
	base + 5%*Y	230	141
20	base + 5%*Z	254	158

- % of lauryl lactate based on total composition

25 The results demonstrate the advantage of a composition in which the base formulation, comprising the surface active agent, and benefit agent are deposited onto the skin in separate domains over a compositions in which the base formulation and benefit agent are in the form of an emulsion.

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CLAIMS

1. An aqueous liquid cleansing and moisturising composition comprising:-

5

a) a surface active agent selected from anionic, nonionic, zwitterionic and cationic surface active agents, soap and mixtures thereof; and

10

b) a benefit agent;

15

wherein the benefit agent and surface active agent are separate but combinedly dispensable from a single packaging means in a predetermined ratio as discrete domains, the domains having one dimension of at least 1000 microns.

20

2. A composition according to claim 1 wherein the benefit agent is selected from silicone oils; gums; fats; oils; waxes; hydrophobic plant extracts; hydrocarbons; fatty acids; alcohols; esters; essential oils; lipids; phospholipids; vitamins; sunscreens; and mixtures thereof.

25

3. A composition according to claim 1 or claim 2 wherein the benefit agent is thickened with a thickening agent.

30

4. A composition according to any one of the preceding claims comprising 0.1 to 50wt% of said benefit agent.

35

5. A composition according to any one of the preceding claims wherein the benefit agent functions as a carrier to deliver efficacy agents to skin treated with the composition.

- 24 -

6. A composition according to any one of the preceding claims wherein the surface active agent is thickened with a thickening agent.

5 7. A method of using a liquid cleansing and moisturising composition comprising a surface active agent selected from anionic, nonionic, zwitterionic and cationic surface active agents, soap and mixtures thereof; and a benefit agent, the method comprising

10

i) dispensing the surface active agent and the benefit agent from a packaging means; and

15

ii) applying the surface active agent and the benefit agent to the human body.

20

wherein said surface active agent and said benefit agent are separate but combinedly dispensable from a single packaging means in a predetermined ratio as discrete domains, the domains having one dimension of at least 1000 microns.

25

8. A method of improving the deposition of a benefit agent from a liquid cleansing and moisturising composition comprising a surface active agent selected from anionic, nonionic, zwitterionic and cationic surface active agents, soap and mixtures thereof; and a benefit agent, the method comprising

30

i) dispensing the surface active agent and the benefit agent from a packaging means; and

35

ii) applying the surface active agent and the benefit agent to the human body

- 25 -

wherein said surface active agent and said benefit agent are separate but combinedly dispensable from a packaging means as discrete domains, the domains having one dimension of at least 1000 microns.

5

9. A method according to claim 8 wherein the composition is dispensed from a single packaging means.

10

10. A method according to claim 8 wherein the surface active agent and the benefit are dispensed from the packaging means in a predetermined ratio.

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/GB 95/01689

A. CLASSIFICATION OF SUBJECT MATTER
A 61 K 7/50

According to International Patent Classification (IPC) or to both national classification and IPC 6

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A 61 K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB, A. 2 246 363 (UNILEVER PLC) 29 January 1992 (29.01.92), claims: page 3, line 31 - page 13, line 3. --	1-4, 6- 10
Y	GB, A. 956 377 (UNILEVER) 29 April 1964 (29.04.64), claims (cited in the application). --	1-4, 6- 10
A	WO, A. 93/09 761 (RICHARDSON-VICKS INC.) 27 May 1993 (27.05.93), claims: page 10, line 28 - page 11, line 14. --	1-10
A	WO, A. 94/04 130 --	1-10

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

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- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

A document member of the same patent family

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26 September 1995

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 95/01689

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	<p>(SCHERING-PLOUGH) 03 March 1994 (03.03.94), pag 4, line 28 - page 9, line 6. -----</p>	

ANHANG

zum internationalen Recherchen-
bericht über die internationale
Patentanmeldung Nr.

ANNEX

to the International Search
Report to the International Patent
Application No.

ANNEXE

au rapport de recherche inter-
national relatif à la demande de brevet
international n°

PCT/GB 95/01689 SAE 113773

In diesem Anhang sind die Mitglieder
der Patentfamilien der in obenge-
nannten internationalen Recherchenbericht
angeführten Patentdokumente angegeben.
Diese Angaben dienen nur zur Unter-
richtung und erfolgen ohne Gewähr.

This Annex lists the patent family
members relating to the patent documents
cited in the above-mentioned inter-
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La présente annexe indique les
membres de la famille de brevets
relatifs aux documents de brevets cités
dans le rapport de recherche inter-
national visée ci-dessus. Les renseigne-
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